

# APPLESCOPE

## DIGITAL STORAGE OSCILLOSCOPE

### Interface for the Apple II Computer

The APPLESCOPE system combines two high speed analog to digital converters with the high resolution graphics capabilities of the Apple II computer to create a digital storage oscilloscope. The CRT monitor is used to graph the digitized input signals on a 280 x 160 dot grid with an additional four lines of text at the bottom of the screen used to display the current trace parameters. Operational software provided in PROM controls all of the trace parameters input from the keyboard and generates the graphics display.

The APPLESCOPE interface consists of two circuit cards connected by a twenty pin flex circuit which plug directly into the Apple II peripheral expansion bus. The input signals are connected directly to a five pin male Berg stick connector on the A1 circuit card which contains the analog to digital converters and trigger comparators. The triggering logic, buffer RAM, control program PROM, timing logic, and DMA circuitry are located on the D1 circuit card.

To operate the APPLESCOPE requires an Apple II computer with a minimum of 24K of memory. The optional SCOPE DRIVER software requires a 48K Apple II with a disk drive and DOS.

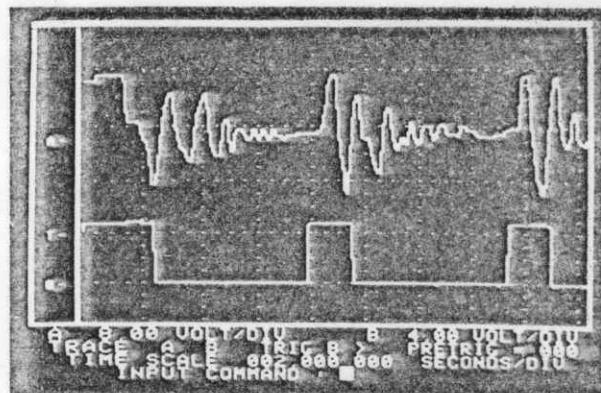
Price for the two board APPLESCOPE system is **\$595.00**

### FEATURES

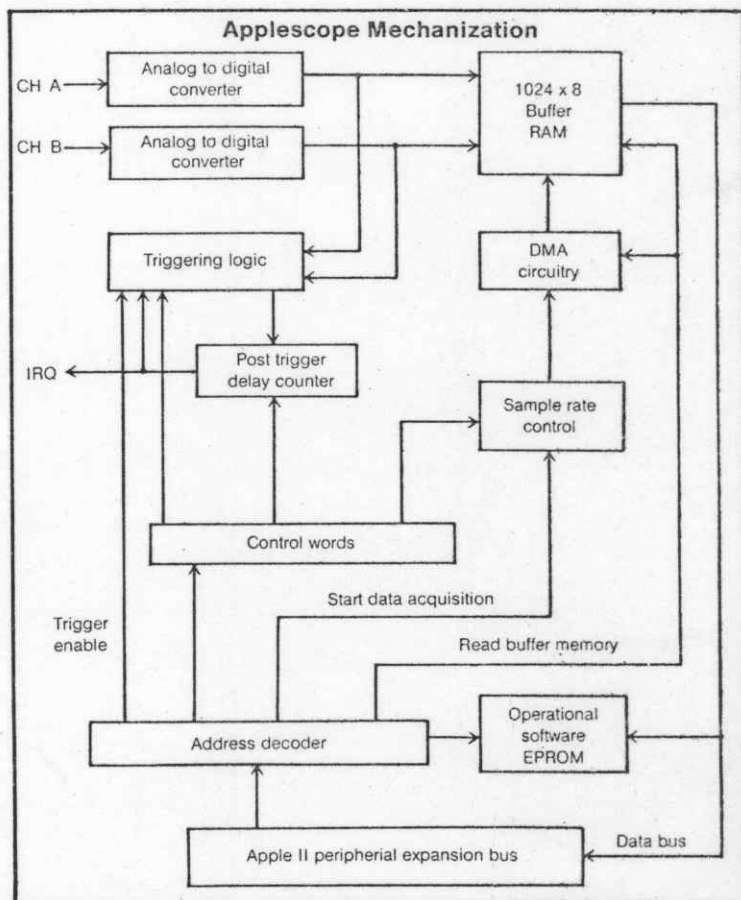
- DC to 3.5 Mhz. sampling rate  
(1.75 Mhz. maximum in dual trace mode)
- Single or Dual channel trace
- 1024 Sample Buffer with DMA control
- 7.1 mV or 71 mV software selectable resolution
- Two 8 Bit modified tracking type A/D's  
(maximum slew rate 56 pts./usec)
- Continuous Trace and Single Sweep modes
- Pretrigger Viewing
- 8 Bit trigger threshold for either channel  
(greater than and less than threshold detection)
- Operational Software provided on EPROM  
(Disk system not required for basic system)

### APPLICATIONS

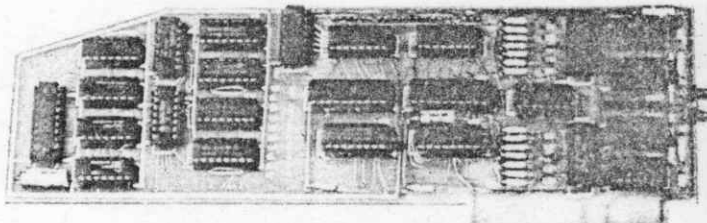
- Transient Signal Analysis
- Laboratory Data Acquisition
- Waveform Digitization and Storage
- Digital Signal Conditioning and Enhancement
- Frequency Spectrum Analysis
- Waveform Comparison and Pattern Matching
- Biofeedback Training



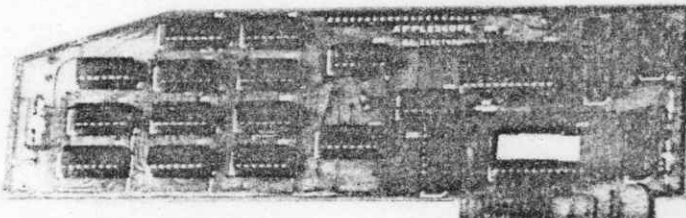
APPLESCOPE - Monitor Display



APPLESCOPE - A1 Circuit Card



APPLESCOPE - D1 Circuit Card



Power Requirements (Typical)	
+ 5 volt supply	420 mA
+ 5 volt supply	50 mA
+12 volt supply	80 mA
-12 volt supply	80 mA

Typical Analog Input

Analog Signal Characteristics		
Parameter	Coarse	Fine
Full Scale Range	$\pm 9.08$ V	$\pm .908$ V
Quantization	71 mV	7.1 mV
Absolute Accuracy	$\pm 1\%$	$\pm 3\%$
Input Impedance	44K	44 K
Slew Rate	4 V/usec	0.4 V/usec
Worst Case Setting	6 usec	6 usec
Input Capacitance	25pF	25 pF

Applescope Accessories	
APPLESCOPE-HR12 High resolution 12 bit analog to digital converter with sample rates to 100 KHz. Requires 48K Apple II with disk drive. Software provide on floppy disk includes basic SCOPE DRIVER package.	Price per channel <b>\$695.00</b>
APPLESCOPE-HRHS High Resolution AND High Speed. Circuit combines two 6 bit flash analog to digital converters to give a 10 bit dynamic range. The 10 bit converter resolution is maintained at sampling rates up to the 7 Mhz. maximum for signal slew rates less than .5 Volts per microsecond. Larger inputslew rates will reduce the converter resolution to 6 bits until the signal stabilizes within the .5 Volt per microsecond limit. Requires 48K Apple II with disk drive. Software provided on disk includes the basic SCOPE DRIVER package.	Price per channel <b>\$695.00</b>
APPLESCOPE-EXT External trigger adapter has a switch selectable external trigger input to a BNC connector mounted in a rear slot of the Apple II computer.	Price <b>\$29.00</b>
APPLESCOPE-BNC BNC adapter connects the Berg stick connectors on the A1 circuit card to male BNC plugs mounted in a rear slot of the Apple II computer.	Price <b>\$14.95</b>
BUS EXTENDERS Allow easy access to Apple II peripheral circuit cards.	Price <b>\$19.95</b>
SCOPE PROBES Oscilloscope probes for use with the APPLESCOPE - BNC adapter.	Price <b>\$29.95</b>

### Scope Driver Options

The Scope Driver software package uses the processing power of the Apple II computer to take the Applescope system beyond the limits of a normal digital storage oscilloscope. The basic package is an upgrading of the Applescope operational software from the EPROM to a 5 1/4" floppy disk. This upgrading includes real time updating of the monitor display for sweep rates slower than 100 millisecond/div., direct storage into the Apple II RAM at sample rates less than 10 khz (extends the 1024 sample buffer to the available Apple II memory) direct storage and retrieval of waveforms on disk, and digital signal conditioning at sample rates below 10 khz.

The cost for the basic Scope Driver package is \$49.00. Once the basic package has been purchased any of the following options may be added at the listed cost. Additional disk copies are available for the nominal cost of \$5.00 and will include the basic package with all of the ordered options.

Option Number	Description	Cost
SD - 001	Digital Volt Meter - Allows the Applescope to be used as a digital volt meter with each channels input voltage continuously displayed on the monitor. Also allows digital readout of points on an acquired trace.	10.00
SD - 002	Signal Averager - Routine automatically acquires from 1 to 255 sweeps and displays the averaged result (minimum time between successive sweeps is 100 milliseconds).	10.00
SD - 003	Chart Record - Produces hardcopy of the Applescope display using a graphics printer (Epson MX100 or equivalent). The output simulates a chart recorder allowing hardcopy of signal traces with up to 20,480 sample points. Specify printer and interface when ordering.	20.00
SD - 004	Auto-Correlation - Uses an auto-correlation function to determine the fundamental frequency of an acquired waveform.	10.00
SD - 005	Spectrum Analyzer - Routine mathematically calculates the frequency components of an acquired waveform and then displays the relative power spectral density.	45.00
SD - 006	Repedative Sweep - Allows up to 64 sweeps to be displayed on the same screen with or without successive offsets. Used to map a time varying response.	10.00
SD - 007	Math Pack - Allows addition, subtraction, inversion and multiplication of the input channels.	10.00

### Warranty

All RC Electronics products are warranted against defects in materials and workmanship for a period of 90 days from the date of original purchase from RC Electronics Inc. Products found to be defective during this time will be repaired or replaced free of charge. This warranty specifically excludes damage caused by user negligence or deliberate misuse as determined by the RC Electronics service department. This warranty is in place of all other warranties expressed or implied with total liability limited to product purchase price. RC Electronics reserves the right to make changes in the Applescope system at any time without notice in order to improve system performance and supply the best product possible.